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ABSTRACT

This paper outlines the method and theoretical basis for establishing and implementing an independent study music curriculum. The curriculum combines practical and theoretical paradigms and leads to an external degree. The computer, in direct interaction with the student, is the primary instructional tool, and the teacher is involved in indirect consultative interaction with the student. The design of the curriculum involves "educational goals clarification," a process by which the students develop a body of information about themselves in order to clarify goals. Through computer assisted instruction (CAI), the intended and resultant curricula begin to merge. This program is oriented toward general studies of music rather than vocational orientation. More than one-half of the program consists of required courses in arts and humanities, science and mathematics, and social and behavioral sciences. Through computer assisted instruction, course offerings could be expanded to include music history, theory orchestration, composition, and keyboard skills. Through Musical Instrument Digital Interface (MIDI), digital synthesizers can talk to each other or other computers. The external degree study program exemplifies a union of theory and practicality for the learner who is ready to assume the responsibility for self-directed learning. (SM)

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Integrating a Music Curriculum into an External Degree Program Using Computer Assisted Instruction

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In this essay I will suggest an independent study music curriculum which combines practical and theoretical paradigms and which could lead to an external degree. The computer, in direct interaction with the student, will be the primary instructional tool; the teacher will be involved in indirect consultative interaction with the student.

It is important to clarify the value of design and implementation in this curriculum. The design involves what Louis R. Holtzclaw calls "educational goal clarification," a process by which the students develop a body of information about themselves. That is, students need time to reflect so clear goals can be attained. An example is when education programs ask applicants to specify goals for educational experience (Holtzclaw, 1986, p.17). The "resultant curriculum" will be beyond direct interaction between the student and teacher. The "intended curriculum" will be the "designed curriculum" (Jorgensen, 1986, p.2).

Curriculum design can occur in the theoretical mode, in which the outcome is "general or universal statements which are supposed to be true, warranted, [and] confidence inspiring," or it can occur in the practical mode. Here, wants and needs are not necessarily well defined and there is "less clarity on the objective side" of the problem. Only at an indeterminate point does the problem take shape. This point is achieved as the "data search becomes more clearly directed [and involves] more of a search for solutions and less of a search for the problem

(Schwab, 1970, pp.2,4). The theoretical mode is approached from bits and pieces of the problem which are then formulated into a broad question such as Tyler's four general questions: "What Educational Purposes should the School Seek to Attain?" "How Can Learning Experiences Be Selected Which are Likely to be Useful in Attaining These Objectives?" "How Can Learning Experiences Be Organized for Effective Instruction?" and "How Can Effectiveness of Learning Experiences Be Evaluated?" (Tyler, 1974).

The Tylerian paradigm has been attacked by Joseph J. Schwab (1970) who argued that curriculum was moribund due to its pre-occupation with theory (Schubert, 1986, p.173). My approach is to show that both paradigms have positive contributions, and to attempt to answer the question "Why can't we synthesize the Tyler and Schwab paradigms?"[1]

The external degree/independent study program exemplifies a union of theory and practicality for the learner who is ready to assume the responsibility for self-directed learning. Through computer assisted instruction (CAI) in the independent study program the intended and resultant curriculum begin to merge since there is no direct feedback to the teacher.[2]

How would a teacher design such a music curriculum? The teacher can approach the design through a theoretical channel and a practical channel. The theoretical channel approaches the curriculum from the standpoint of what the curriculum should be like (Schubert, 1986, p.173). Schubert suggests that we can use

Aristotle's four categories of causation to compare and contrast theoretical and practical modes of curriculum. These are: formal, material, efficient and final (Schubert, 1986, p.174). The formal cause or problem source of the theoretic is a state of mind and the practical is the state of affairs. This is analogous to what Jorgensen calls the "dialectic or tension between the desirable and the possible, between what teachers want to do and what they can do" (Jorgensen, 1986, p.10). We can plug into this first causation category of Aristotle the broad philosophical question of theory and ask, "what are the characteristics of a good music program?". The practical researcher would want to focus on a particular program at a particular place and the problem actually experienced there. For example, how can we improve the content of orchestration classes at school A? The teacher would need to formulate a general plan for the particular music program and then, depending on his/her Assumptive Frame of Reference (AFR), narrow the broad philosophical premise towards more specific practical objectives based on what really can be accomplished.[3] Here, the resultant curriculum will manifest itself during interaction of teacher and learner. What was intended may be different than what results during the actual lesson (Tiryakian, 1973, pp.199-201).[4]

The second Aristotelian causation category is the material cause which asks: What is the subject matter under inquiry? (Schubert, 1986, p.176). Taking orchestration as an example, the

theoretic researcher would look at the broadly applicable generalities and make lawlike statements regarding the subject. The practical researcher would generalize the problem, then look at specificity within orchestration. What combinations of instruments are needed to achieve a certain effect? What are the ranges of those instruments? How do the various instruments blend? What are the normal technical capacities of each instrument?[5]

The third cause is the efficient cause (Schubert, 1986, p.174). A schism exists here between the theoretical and practical researcher. The theoretical researcher loves the inductive approach in which bits and pieces of a problem are formulated into a broad question. The practical researcher will discover a nebulous undefined problem at the outset which only begins to take shape at an indeterminate point through deductive reasoning. Interaction, especially student input, is important for the practical researcher.

The last of Aristotle's four categories of causation is the final cause. The theoretic researcher treats persons or situations as broad categories rather than acknowledging their unique needs and interests. What is present then with theoretical researchers and practical researchers are two entirely different, but complementary methods of inquiry. The theoretical researcher applies the principles of inductive reasoning to curriculum design and the practical researcher applies deductive reasoning. I feel that curriculum

developers should study both human nature and learning psychology if they hope to build an effective curriculum because of the different but complementary inquiry techniques characteristic of theoretical and practical researchers.[6]

The external degree program has at its core the idea that "what you know is vastly more important than how you learned it" (Holtzclaw, 1980, p.355). External degree programs depart from the traditional requirements of on-campus attendance over a two or four year period. These programs are targeted towards men or women who:

1. Have full time jobs or family responsibilities.
2. Have inadequate financial resources.
3. Have extremely mobile occupations.
4. Are confined to penal institutions.
5. Have psychological barriers that prevent them from seeking the education they need.
6. Need greater freedom in timing and pacing their learning experiences through independent study, credit by examination, proficiency examinations, extension classes, tv and radio instruction, weekend sessions, intensive residential seminars and workstudy (Holtzclaw, 1979, p.5).

The external degree is not vocationally oriented but generally oriented. More than half of the program consists of required courses in Arts and Humanities, Science and Mathematics and

Social and Behavioral Sciences.[7] Indiana University constructed a modal profile (n=181) of external degree participants in late spring 1979 and found (Holtzclaw, 1980, p.356) that most respondents were white, married with children, and involved in management, professional, clerical/laborer or homemaker occupations. They worked 29 hours per week with a family income of eighteen thousand per year. Sixty-four percent were female and thirty-six percent were male. Today's adult learners are mostly young, well educated and making good salaries. In Indiana seventy one percent are aged twenty-two to forty. Eighty percent are white and fifty-nine percent make eighteen thousand or more per year. Seventy-five to eighty percent attended college previously (Sosdian and Sharp, 1978, p.14). Independent study leading to the external degree is frequently pursued by older adults who have a need to clarify educational goals (Holtzclaw, 1984) and attain a positive self concept. Most of those surveyed (sixty-seven percent) preferred to take the courses on campus, twenty-two percent by correspondence and eleven percent at a location near their home such as shopping center, church or library. In fact at least one university campus offers a "Learn 'N Shop" program where students take classes in conference rooms of shopping malls (Holtzclaw, 1980, p.361).

In a telephone interview on October 22, 1986 with Dr. Holtzclaw, Associate Director of Extended Studies for the General Studies Degree Program at Indiana University, I learned that off-campus participation in the program is presently on the

upswing and that there is a huge market for adults in this field. He said that before Susan Simosko's book Earn College Credit for What You Know (1985, Washington, D.C.: Acropolis books), there were 350-400 inquiries per month at Indiana University - Purdue University Indianapolis (IUPUI) regarding external degree programs. Now there are 1000 or more inquiries per month. Family Circle and Woman's Day have been popular media for citing the external degree programs (EDPs). According to Dr. Holtzclaw, the main component of the EDP at IUPUI is self acquired competency. Curriculum is based on previous life experience. Most of the EDPs are undergraduate; however, there are about a dozen graduate programs in the United States.[8] Holtzclaw cited Nova University in Florida, accredited by the Southern Association of Colleges and Schools, as one of the better known external degree programs.

Theorist Malcolm Knowles makes four assumptions about education for adults (andragogy) contrasted with education for children (pedagogy). The categories of the assumptions are changes in Self Concept, Role of Experience, Readiness to Learn and Orientation to Learning. The change in self-concept assumes that as a person grows and matures his/her self-concept moves from dependency to self-directedness (Knowles, 1978). In the 1979 Holtzclaw survey, fifty-eight percent came to EDP to gain self-concept.

Knowles' final assumption, Orientation to Learning, describes the younger learner's subject-centered orientation to learning

versus the mature learner's problem-centered orientation. This suggests Aristotle's notion of formal causation in which the problem source for the theoretic researcher is a state of mind and that of the practical is the actual state of affairs. I see the mature, older learner more involved in the practical than the young learner because the older learner may be supporting a family or holding a job.

Again the Aristotelian causations of the formal, material, efficient and final are present. Formal causation is apparent in the theory that the "the older adult needs a positive self concept" and the practical evidence that the self concept is strengthened by self directed study.

The material cause asks, "what is the subject matter under inquiry?" can once again involve the orchestration course. Through an EDP the student has input by selecting a course that frees him/her from the constraints of having to take the course on campus without sacrificing the element of design that is present in the curriculum of the course itself. Such a course would be feasible for the men and women who were targeted in the six classifications from the survey previously cited. The ramifications for this material causation are extensive in that music can reach a greater segment of the population of adults.

The efficient cause in an EDP works with both the theoretical and practical paradigms but in entirely different ways. The practical researcher deals in part with interaction and with

encounter [as lived experience] (Schubert, 1986, p.175). A discussion of the encounter as lived experience follows.

One of the major components of an EDP is self-acquired competency. Holtzclaw (1984) cites student participants' reactions to the process of crediting learning from life experience and approaches this from both the student's and the institution's point of view.

> The students who are returning to learning in college face questions such as (a) How do I fit learning outcomes of my experiences with a criteria and standards of college-level learning? (b) How do I review past experiences and extract the appropriate lessons learned? (c) How do I connect the lessons learned with theories and concepts developed through scholarship? (d) How can I equip myself to learn from my experiences and gain some of the skills necessary for insightful theory building? (e) How are my values driving me or motivating my return to school? (f) What type of learner am I? (g) What should I choose as my major area of concentration? (h) What are the long-term implications of my decisions? (Mark, M. and Menson, B. 1982).

Institutions have to face the questions regarding how to conduct assessment programs for prior learning.

A portfolio developed by the student is operative in the process of answering the former questions. Malcolm Knowles has

pointed out that "to a child, experience is something that happens to him: to an adult his experience is who he is" (Knowles, 1978). This means that an adult learner's self-concept is extremely important. The process for developing the portfolio took place using three steps:

> (a) An autobiographical resume which sets for the content for learning experiences, (b) An articulation of the learning experiences in clusters of learing categories which consist of a series of 'I know' or 'I can do' statements and how they equate with the college curriculum, (c) A section consisting of documentation verifying this learning (Holtzclaw 1984, p.13).

The most important student benefit reported from producing a portfolio was increased self-esteem. Other benefits reported were new potential for self and future, better understanding of personal goals, increased ability for self diagnosis, better understanding of educational goals, moral support for pursuing personal choice among the options and knowledge that the university recognizes learning achieved outside the classroom. This last benefit represented the most important outcome for the learners. Schubert explains that in the efficient cause the theoretical researcher would separate the inquirer (the learner in this case) from the actual situation (Schubert, 1986, p.174). The practical researcher (in this case those who are responsible for administering the EDP program) ask, through surveys, how can we

help the student achieve his/her goals through self-acquired competency? Schubert provides an excellent analogy to this causation when he states:

> One who has lived for years in a public housing project in the inner city knows life there better than a sociologist who surveys the residents over a four-day period. Teachers who live in classrooms are in a better position to understand them than are the theoretic researchers who have amassed generic knowledge about classrooms by spending an hour or two gathering data in each (Schubert, 1986, p.174).

Likewise, students who have extensive life experience with a wide variety of occupational backgrounds are in a better position to critically evaluate themselves than are faculty who may not know them. It is marvelous that Indiana University is willing to recognize this experience by awarding credit. The difficulty lies in helping the adult learner to maintain a positive self image should the experience not be judged creditable. For the theoretic researcher, the end of inquiry or final cause is knowledge for the sake of knowledge, but for the practical researcher, knowledge is followed by decision, meaning, a sense of direction and action. The External Degree Program targets individuals who are actively involved with families, jobs and various life experiences. They seek a practical way to relate knowledge to their jobs. Most of the individuals cited are seeking knowledge not just for the sake of knowledge but for

improved self-esteem.

A music program built in such a manner must recognize a student's previous accomplishments in ways other than multiple choice, faculty designed, teacher centered, objective tests. A portfolio of learning experiences including knowledge of theory, history and performance could be designed so individualized curricula could be developed and repetitive learning of skills would be eliminated. If the student has the knowledge it should be credited; for academically - oriented music courses it might be possible to construct an autobiographical portfolio with documentation for validation to credit previous life experience. As it stands presently, the EDP applied to music involves only two three-credit courses at Indiana University: Music for the Listener (M174) and Rudiments of Music (T109) available from the Indiana University Independent Study University Courses Catalog in the School of Continuing Studies/Division of Extended Studies. I maintain that through computer assisted instruction, the course offerings could be expanded tremendously to include music history, theory, orchestration, composition, and keyboard skills. The tool that will aid the learning process for the greater segment of the population targeted by Holtzbauer is the computer. With the computer, curriculum design is manifested in indirect teacher interaction with the student. Therefore a possible criticism would be that there is no chance for what Jorgensen calls the "resultant curriculum" where the teacher in the actual lesson would improvise

strategies as he/she goes along, thereby generating new curriculum design. This criticism has some merit. However, technology already exists to allow the student to call the instructor at IU directly from the computer terminal and engage in dialogue by typing. Electronic mail may also be sent between teacher and student.

To adequately approach the problem of setting up a CAI curriculum, an inductive approach in the realm of the theoretical Tylerian paradigm will serve initially. One might ask the following questions when using CAI in music: Where would it be used? What subjects would be taught? How would CAI be used? Why use CAI in music education?

CAI could be used in dorm rooms, classrooms or labs. Some computers have the ability to support more than one user at a time, therefore the user need not be in the same building, county, state or even country. Through Musical Instrument Digital Interface (MIDI), digital synthesizers (which are really electronic music computers) can talk to each other or other computers such as IBM PC's, APPLE II's, COMMODORES, RADIO SHACK, VAX, among others. It is theoretically possible to interface one's personal computer with a synthesizer that is not in the same room as the user's computer. The synthesizer would serve as the CPU and the personal computer would be MIDI'd to the CPU. The user would have a keyboard attachment hooked up to his/her personal computer.[9] Most microcomputers now on the market have musical synthesis capability and many have MIDI, but professional state of the art synthesis is beyond the reach of all but the wealthiest

individuals and institutions in society. However, an institution of higher learning could purchase the CPU and justify its cost through multiple user demand. If the unit could simutaneously support multiple users, the economy of such an idea would be further justified. Several curricular principles are implicit and advantageous to the CAI approach--namely, economy, balance, realism, structure, ethical acceptability, excellence, consistency, correspondence, coherence, relevance, and personal preference.[10]

Virtually all music subjects could be taught with CAI. Using CAI a student could compare and edit parts for an orchestral composition, play it back with almost authentic instrumental reproduction, edit the parts and print them out all from one work station with no need for acoustic instrumentalists. With a multi-user facility the student would not have to leave his/her dormitory room or "electronic cottage".[11] The student could use interactive video in which the student's responses to television instruction determine the direction of the curriculum and/or word processing for text oriented courses like music history and literature.

CAI provides a practical approach to music learning. CAI not only eliminates the need to use class time for repetitive drill, but it also allows for direct or indirect interaction among students and teachers and provides for student-centered or teacher - centered learning.

It is somewhat disturbing to realize that computer technology is advanced enough to replace acoustic instruments but reassuring to know that there are supporters and critics of computerized music. Jerry L. Voorhees, Associate Professor of Music at Southeastern Louisiana University provides some important insight into the problem. He asks three questions: (a) Will electronic instruments be able to produce musical sounds that are indistinguishable from the sounds of acoustic instruments? (b) What does an audience want to experience at a live performance? (c) What should we teach our students about music? Voorhees acknowledges that the technology does exist to electronically reproduce musical sounds. He says, however, that an audience wants to see live performances because of the element of risk--that the artist is like a tightrope walker. Most pertinent to this essay, he asks,"what should we teach our students?". His question is theoretic, but as the discussion unfolds a clear practical method of inquiry emerges. He questions outmoded teaching methods and suggests implicitly that acoustic instrumentalists be prepared for and be willing to retrain just as autoworkers had to retrain because of robotics.[12] He says that acoustic instruments will survive but questions present teaching that relies so heavily on learning to perform on a single instrument. He mentions that "we are still in the backwash of the cult of the virtuoso" (Voorhees, 1986, pp.32-36).

Voorhees implicitly suggests that CAI can eliminate the following tasks from a teacher's time and assign them to the computer: (a) "Recognizing and reproducing pitches, rhythms, dynamics and tone colors, (b) Repeat programmed musical sequences at various tempos and pitch levels, (c) Transpose, (d) Harmonize melodies, (e) Transcribe musical sounds into written notation and vice versa, (d) Produce an almost infinite variety of accompaniment patterns." The teacher is thus freed to facilitate and teach art where judgements and feelings are needed - qualities that a computer cannot reproduce.

He compares musicians with science students and store clerks. Science students used to need slide rules - now they have calculators. Store clerks used to have to know arithmetic. Now a computer does all of the work. Musicians used to be required to read music, understand chord structure, transposition, and instruments. Now computers can do these things for non-musicians and the non-musicians make more money than traditional musicians.[13] These "artistes manque's" or "dilettantes" are taking part in music now because of modern technology. They are able "to convert their inspirations into satisfying musical statements." He asks, "Is it our responsibility to teach our students to understand the technicalities of music, even though these can be handled by a computer?" "Are we responsible for teaching them how to make a living as musicians?"

Douglas Sloan, Professor of History and Education at Teachers College, Columbia University has argued for careful thought before we computerize schools. He argues not for whether one is for or against CAI but how to define the human educational criteria and priorities that make a truly human use of the computer possible. He argues that is is dangerous for students to develop an exclusive preoccupation with the image of a machine as a model (Sloan, 1985, pp.51-52,79).

Criticism of CAI has extended to the general public through magazines such as US News and World Report (November 10, 1986). The public is becoming wary of software just as of other commercial products; and experts are saying that software engineers not only need to be experts in programming, but also in their field of endeavor as well as in instructional design.

The opportunities for students today are greater than ever before. William Schubert wrote Curriculum, Perspective, Paradigm and Possibility because of childhood experiences and the quality of life he achieved by building his own curriculum. The question "Are we responsible for teaching them [students] how to make a living as musicians?" brings us to the idea of looking into the future and taking a journey. The future for curriculum in music is extremely exciting. Educators and students of music with a vision can see this exciting journey.

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Footnotes

[1]This question was posed by E.R. Jorgensen in E616 Curriculum class seminar at Indiana University, Fall 1986.

[2]Jorgensen discusses intended and resultant curricula as values in the design of the curriculum on p. 2 of The curriculum design process in music. She explains here what is meant by curriculum design from her point of view.

[3]This source is cited in Jorgensen's paper The curriculum design process in music, p. 23.

[4]Jorgensen, The curriculum design process in music. p. 15. This is where a teacher would not have to improvise if CAI is used because the lesson will be the same each time, i.e., the teacher may have intuitively recognized the dialectic between the desirable and the possible, but would have to provide the potential improvised strategies in the computer program--anticipating the student's response. This is where CAI can break down.

[5]Schubert stresses along with Aristotelian causation the aspect of interaction in curriculum inquiry, i.e., how does the teacher affect other teachers and how does the teacher influence the learners. See p. 176.

[6]I am making particular reference to what I value in curriculum design and am using Schubert's statement on p. 196 to substantiate this reference to EDPs.

[7]For more information see the Indiana University Bulletin, School of Continuing Studies/General Studies Degree, Division of Extended Studies-Systemwide, 1986-1987 pp. 4-5. Available from Owen Hall, Indiana University, Bloomington, IN.

[8]According to the Directory of External Graduate Programs (1982), edited by Mary Kahl, Regents Program in New York State, University of the State of New York/Cultural Education: Albany, NY, August 1982.

[9]I have developed a diagram illustrating this idea but no prototype has been developed as of yet. The closest facility to this idea is the new Synclavier recording studio at Dartmouth College in Hanover, New Hampshire. Although the facility is not on a time sharing basis according to Professor David Jones whom I interviewed in August 1987, it is an incredible facility. I refer the reader to the July 1987 issue of Mix magazine, Vol. 11, No. 7, pp. 64-70 where Dan Daley wrote an article entitled "Ivy League goes digital". The article details the equipment in the Dartmouth music department's new lab.

[10]Jorgensen provides a detailed explanation of these descriptors in The curriculum design process in music. Much reflecting needs to be done by curriculum developers before meaningful interaction can take place.

[11]The term electronic cottage was coined by John Naisbitt in Megatrends magazine and refers to this idea.

[12]It should be noted that I interpret this to be a more idealist philosophy taking on the metaphor of journey and looking into the future. The daily world for most of us does not exist in this condition nor will it in my opinion for at least ten years.

[13]I addressed this article in an earlier paper. Other critical views of CAI were addressed by me in more detail. See paper for E616 Curriculum in Music, unpublished manuscript by Robert Brinkley submitted on 2 December 1986.